

PCT

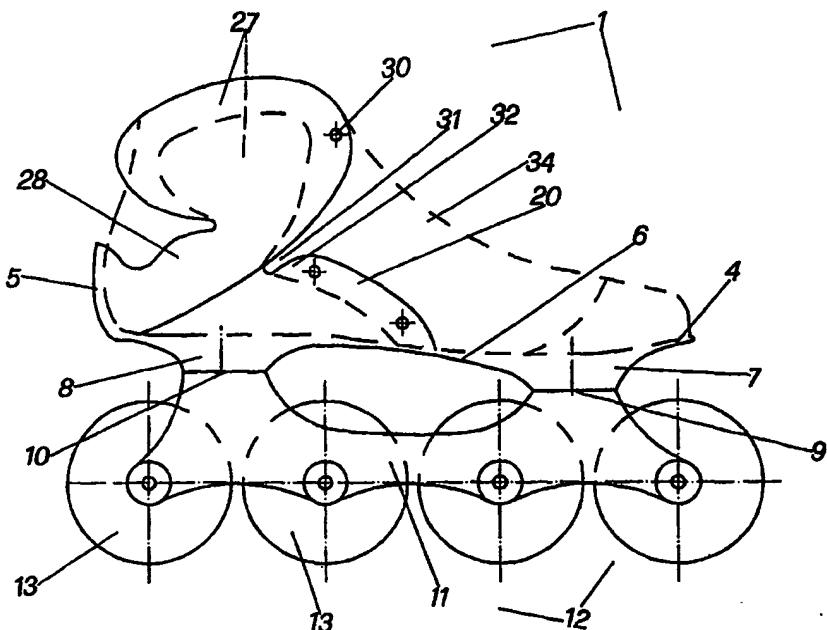
WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : A43B 5/16	A1	(11) International Publication Number: WO 99/01047 (43) International Publication Date: 14 January 1999 (14.01.99)
(21) International Application Number: PCT/EP98/03902		(81) Designated States: AU, CA, CN, JP, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).
(22) International Filing Date: 25 June 1998 (25.06.98)		
(30) Priority Data: TV97A000088 2 July 1997 (02.07.97) IT		Published <i>With international search report.</i>
(71) Applicant (for all designated States except US): F.B.C. DI GIULIANO FRATI & C. S.N.C. [IT/IT]; Zona Industriale, I-33085 Maniago (IT).		
(72) Inventors; and		
(75) Inventors/Applicants (for US only): GOBBO, Livio [IT/IT]; Via Kennedy, 5, I-31040 Trevignano (IT). GOBBO, Franco [IT/IT]; Via Kennedy, 5, I-31040 Trevignano (IT).		
(74) Agents: GIUGNI, Valter et al.; Propria S.r.l., Via Mazzini, 13, I-33170 Pordenone (IT).		

(54) Title: SPORT WEARABLE STRUCTURE, IN PARTICULAR FOR IN-LINE AND SHORT-TRACKING ROLLER SKATES



(57) Abstract

Footwearable structure (1) with shell and shaft (2, 29) made up of a plurality of components (19, 20, 27, 28, 43) and alveolar elements (35, 40, 41 and 45) from restraints of a specific shoe (34) or of one that may be applied to other uses, when disengaged from said sports structure, in particular for in-line and short-tracking roller skates.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakhstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

SPORT WEARABLE STRUCTURE, IN PARTICULAR FOR IN-LINE AND
SHORT-TRACKING ROLLER SKATES

DESCRIPTION

The invention relates to a sport footwearable structure, a footwearable-skate structure assembly, in particular for in-line and short-tracking roller skates.

Hereinafter, the term in-line roller skates refers to a well-known sport means, having a plurality of wheels associated longitudinally with a rigid support, with specific shoes and used in various disciplines, normally performed by skaters on skating rinks with complex manoeuvres, such as frontflips, backflips, liukang or kungloo turns, in backside or in backslide, on boardwalks up to the fishbrains or other manoeuvres, in addition to speed competitions, and said short-tracking, as they are currently known in the specific field.

As is well known in the present state of the art, the operating effectiveness of in-line or side-by-side roller skates is dependent more on the conditions of the surfaces skated upon than on the mechanical properties of the skates themselves, which have been consolidated through considerable expansions of said sport activities. Said conditions, while normal on covered rinks, are practically nonexistent on external rinks or on road surfaces, where a slight unevenness or a small foreign body is sufficient to jeopardize manoeuvres and movements and/or cause serious, and sometimes dangerous falls, particularly in specialties like said short-tracking.

The vibrations and their resonance occurring on such skates and on rigid footwear, caused by unbalanced wheels or due to rolled asphalt-conglomerate surfaces, are such as to determine serious damage on said means, on associated rolling units and/or their mechanical parts; with as many other established negative effects caused by abruptly slowed-down dynamic phases and/or interrupted manoeuvring procedures of a skater; with consequent intense numbing in tarsal and metatarsal regions of the feet, muscular cramps and dizziness due to limited vasal blood supply.

To overcome said disadvantages, various manufacturers have proposed in-line roller skates with interposed rubber pads for supporting rigid footwear on equally stiff flat foot arch supports, which, though they may be effective for normal amateur activities, are able to cause problems to expert skaters that are as serious as the above-mentioned disadvantages.

In fact, both in training and in serious competition on rinks in said manoeuvres, an athlete is subjected to severe alternating stresses due to forces generated by vibrations and loads bearing on such rigid structures and transmitted integrally from the lower limbs to the backbone and the head, with negative effects on the functionality of corresponding vital organs and systems.

Moreover, said rigid footwear designed for normal skates, worn with interposed closed-cell "indoor light shoes", although ventilated by recurrent cavities, are not capable of allowing a sufficient and effective breathability of shod feet and covered shin parts.

As much can also be said for the well-known present speed-competition shoes, made "to measure", normally using plaster casts of a skater's feet, with imprints enlarged with padded intermediate materials in order to achieve, in subsequent phases, "made-to-measure insides" of foam plastomers between such moulds, with obvious involved processes and considerable production costs, leaving the aforesaid disadvantages unresolved.

In fact, unfavourable conditions emerged in these formations after being used a few times, due to: impermeable make-ups prejudicial to the proper transpiration of liquid and volatile humours secreted by the sweat glands of covered limbs, activated by the vagal section of the neurovegetative system; the occurrence of putrid fermentation due to significant sweat retentions; epithelial

remnants, from maceration, containing considerable quantities of staphylococci and streptococci; hyperperspiration such as to compromise said dynamic and specific usage properties. These properties are necessary most of all for procedures and phases both in short-tracking practice and competitions, in such acrobatic tricks, in the so-called aerials, mistyflips or halfpipes, to which can be ascribed the greatest energy and heat outputs generated in said dynamics, encountered by both amateur athletes and expert skaters.

The fundamental purpose of this invention is to solve the above-mentioned technical problems, avoiding drawbacks and/or disadvantages, in any way they may be blamed as their causes or effects.

The results achieved with this wearable structure, resulting from methods according to this invention, ensue from: accurate control of the angles of incidence of the roller skates on the surfaces impinged upon, radial inclinations suitable for balancing the centre of gravity of a skater, especially in short-tracking; constant mutual contacts between the foot and this wearable structure, for changes of position and directional shifts corresponding to their movements; interconnections conforming to balanced pressures on tarsal and metatarsal parts, and on malleolar, tendinous and contiguous regions of a shod foot; insulation, obtained from internal alveolar formations, determining an efficient damping of the effects of vibrations originating from rolling units in severe operation, generated from alternated dynamic actions of said units, and transduced by individual sources of gravity of a skater misaligned with respect to the centre of symmetry of this structure; reduction of frequencies and amplitudes of said vibrations, such as to prevent the generation of resonances due to periodic coincidences of alternating forces and/or to oscillations induced in said assembly by the conditions and stresses to which it is subjected; related effects, made ineffectual on dynamics, particularly in short-tracking, during racing phases and procedures; with a wearable structure with ventilated inside both in the shaft and in the shell made up of open and alveolar areas such as to favour effective inflows of air from outside and corresponding outflows of excreted perspiration, appreciably limiting hyperhidrosis and hindering spasms of the cutaneous blood vessels and congestions of covered body parts due to interrupted excretions and vasa! blood flows; precluding stagnations, the formation of moulds, proliferations of bacteria and associated consequences.

BEST AVAILABLE COPY

WO 99/01047

PCT/EP98/03902

The advantages obtained with this wearable structure, realized in accordance with this invention, consist substantially in that: constant and effective interactions are achieved in every procedure of the above-mentioned short-tracking speed activities, developed to safeguard the limbs, systems and vital organs of an athlete, as well as the components of said assembly; to which is temporarily associated a conventional sport shoe, preferably light and designed to be put to other uses when disengaged, such as to walk to starting spots, enter or remain in living or other quarters, used as normal leisure, trekking or similar footwear, or worn by an athlete, whether the athlete be a skater or otherwise, especially for uninterrupted periods.

With the benefits derivable from this wearable structure, made of suitable filled plastomers, preferably filled with carbon fibres, which, suitably formed, can be used in other related activities, such as ice skating, in the so-called cross-country mountain skates, for skates with side-by-side wheels and/or for different uses, including cross-country and alpine skiing, and for the so-called ski-rolls for road surfaces and/or for other sport activities.

Additional characteristics, advantages and functions of the invention will become evident hereinafter from detailed descriptions of examples, in themselves not binding and/or restrictive, of preferential practical embodiments of a wearable structure, normally for in-line and short-tracking roller skates, in accordance with this invention, illustrated by the following drawings, in which :

- Fig. 1 is a side view of said wearable structure, showing the sole with tangible projections, partially in cross section, designed to be associated with skates, normally in-line roller skates or ice skates;

- Fig. 2 is a view from above of the structure of Fig. 1 with said external prominences noticeably offset with respect to the longitudinal axis of the arch support;

- Fig. 3 is a side view of an assembly consisting of a skate and a wearable structure, as in Figures 1 and 2, resulting from a practical industrial embodiment;